INL Advanced Manufacturing Center

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INL Advanced Manufacturing

National Need and INL Focus Areas

• Nuclear fuel and cladding
  – Ceramic systems
  – Metallic systems

• Nuclear structures
  – 304, 316 steel, high temp materials

• Instrumentation
  – Unique geometries and materials
  – In-situ instruments, co-printed

• Industrial Process Applications
  – Catalysis
  – Recycling
  – Quality predictions

Potential Outcomes

• Workshop(s) on teaming and critical projects
• Qualified nuclear fuel and structural systems
• Advanced in-core instruments
• Computer simulation and process controls to improve quality and economics
INL Advanced Manufacturing-Issues to Address

- Issues to Address Include:
  - Process Control and Process Rheology
    - Study of Process Parameters and Effects
  - Control Software
    - Image processing and machine control
  - Feedstock Development
    - How do we overcome the proprietary nature of most feedstock
    - How do we overcome high machine-feedstock selectivity
  - What is the Role of Modeling and Simulation in Additive Manufacturing
  - What Steps Need to be Taken to Development the Right Kind of Expertise
  - What Areas are Best Suited to Additive Manufacturing in energy application
    - What materials and components are the most promising and would deliver highest return on investment
  - What Resources are Required for Process and Materials Qualification for Energy Application
    - Development of standards
  - How Do We Best Leverage Resources To Achieve Common Goal
    - What sort of collaborative efforts would serve us best?
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Potential Funding Sources

- INL internal funding
- INL LDRD funding
- In-kind (technical and material) investment from industry.
- Office of Energy Efficiency and Renewable Energy
  - Advanced Manufacturing Office
- Office of Nuclear Energy
- Department of Defense.

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